

| Population excluded | Number of individuals excluded | Similarity to original PCA $t'$ | Similarity to geography $t''$ | $t'' - t_0$ |
|---------------------|--------------------------------|---------------------------------|-------------------------------|-------------|
| Han                 | 34                             | 1.000                           | 0.715                         | 0.010       |
| Maya                | 21                             | 1.000                           | 0.713                         | 0.008       |
| Karitiana           | 13                             | 1.000                           | 0.710                         | 0.005       |
| Xibo                | 9                              | 1.000                           | 0.710                         | 0.005       |
| Dai                 | 10                             | 1.000                           | 0.708                         | 0.003       |
| Yi                  | 10                             | 1.000                           | 0.708                         | 0.003       |
| Tujia               | 10                             | 1.000                           | 0.708                         | 0.003       |
| Miao                | 10                             | 1.000                           | 0.708                         | 0.003       |
| Tu                  | 10                             | 1.000                           | 0.707                         | 0.002       |
| Naxi                | 8                              | 1.000                           | 0.707                         | 0.002       |
| Lahu                | 8                              | 1.000                           | 0.707                         | 0.002       |
| Surui               | 8                              | 1.000                           | 0.707                         | 0.002       |
| Sindhi              | 24                             | 1.000                           | 0.707                         | 0.002       |
| Makrani             | 25                             | 1.000                           | 0.707                         | 0.002       |
| Mongola             | 10                             | 1.000                           | 0.707                         | 0.002       |
| Yakut               | 25                             | 1.000                           | 0.707                         | 0.002       |
| Han (N. China)      | 10                             | 1.000                           | 0.707                         | 0.002       |
| She                 | 10                             | 1.000                           | 0.707                         | 0.002       |
| Hazara              | 22                             | 1.000                           | 0.707                         | 0.002       |
| Brahui              | 25                             | 1.000                           | 0.707                         | 0.002       |
| Cambodian           | 10                             | 1.000                           | 0.707                         | 0.002       |
| Papuan              | 17                             | 1.000                           | 0.707                         | 0.002       |
| Japanese            | 28                             | 1.000                           | 0.707                         | 0.002       |
| Balochi             | 24                             | 1.000                           | 0.707                         | 0.002       |
| Daur                | 9                              | 1.000                           | 0.706                         | 0.001       |
| Colombian           | 7                              | 1.000                           | 0.706                         | 0.001       |
| Oroqen              | 9                              | 1.000                           | 0.706                         | 0.001       |
| Melanesian          | 11                             | 1.000                           | 0.706                         | 0.001       |
| Pathan              | 22                             | 1.000                           | 0.706                         | 0.001       |
| Kalash              | 23                             | 1.000                           | 0.706                         | 0.001       |
| Hezhen              | 9                              | 1.000                           | 0.706                         | 0.001       |
| Mandenka            | 22                             | 1.000                           | 0.705                         | 0.000       |
| Uygur               | 10                             | 1.000                           | 0.705                         | 0.000       |
| Burusho             | 25                             | 1.000                           | 0.705                         | 0.000       |
| Yoruba              | 21                             | 1.000                           | 0.704                         | -0.001      |
| Tuscan              | 7                              | 1.000                           | 0.704                         | -0.001      |
| Druze               | 42                             | 1.000                           | 0.704                         | -0.001      |
| Adygei              | 17                             | 1.000                           | 0.704                         | -0.001      |
| Biaka Pygmy         | 22                             | 1.000                           | 0.703                         | -0.002      |
| Italian             | 12                             | 1.000                           | 0.703                         | -0.002      |
| Mbuti Pygmy         | 13                             | 1.000                           | 0.703                         | -0.002      |
| Orcadian            | 15                             | 1.000                           | 0.703                         | -0.002      |
| Basque              | 24                             | 1.000                           | 0.702                         | -0.003      |
| Russian             | 25                             | 1.000                           | 0.702                         | -0.003      |
| French              | 28                             | 1.000                           | 0.702                         | -0.003      |
| Palestinian         | 46                             | 1.000                           | 0.701                         | -0.004      |
| Bantu (Kenya)       | 11                             | 1.000                           | 0.701                         | -0.004      |
| Bedouin             | 45                             | 1.000                           | 0.701                         | -0.004      |
| Sardinian           | 28                             | 1.000                           | 0.701                         | -0.004      |
| San                 | 5                              | 1.000                           | 0.700                         | -0.005      |
| Pima                | 14                             | 1.000                           | 0.700                         | -0.005      |
| Mozabite            | 27                             | 1.000                           | 0.699                         | -0.006      |
| Bantu (S. Africa)   | 8                              | 1.000                           | 0.697                         | -0.008      |

Table S4: Change of the Procrustes similarity when excluding one population from the worldwide example. The Procrustes similarity between genetic coordinates and geographic coordinates is  $t_0 = 0.705$  in the original analysis (Fig. 1).